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TITLE : DIFFRACTION GRATING AND ITS FORMING METHOD

ABSTRACT : PURPOSE: To obtain stable spaces among particles with good reproducibility, to make the distribution of diameters uniform, and to obtain excellent transparency, moisture resistance and storage stability by preparing hollow particles to have the diameter of the max. cross section smaller than the wavelength of visible light.

CONSTITUTION: This grating is a hologram comprising a high refractive index layer and a low refractive index layer. The high refractive index layer and the low refractive index layer are formed by changing the density of hollow particles. The diameter of the max. cross section of hollow particles is smaller than the wavelength of visible light. These hollow particles are hollow polymer particles having a submicron-order particle size and prepared by emulsion polymn. The diameter of the max. cross section is smaller than the wavelength of visible light. If the diameter is larger than the wavelength of visible light, it is not preferable because particles reflect visible light. By densely dispersing hollow particles the inside of which are filled with air, the layer is made to have lower refractive index. In the obt'd. layer, good modulation intensity of the refractive index is obt'd. compared to the high refractive index layer having a sparse state of particles. Thus, a higher diffraction efficiency can be obt'd. By preparing the particles with uniform particle size not to reflect visible light, good transparency can be obt'd.

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